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ABSTRACT

Information, materials, and suggestions are offered for providing vocational education for the gifted and talented. Introductory materials include definitions of the gifted, a review of vocational education literature concerning gifted and talented students, and procedures for identifying gifted and talented students. Guidelines are provided both for the vocational teacher to use in preparation for meeting the needs of a gifted and talented student and for the program itself. Four curriculum/instructional approaches that can be used to provide programs for the gifted and talented students are then described: ability grouping, acceleration/individualization, enrichment, and differentiated instruction. A listing of methods and techniques of instruction that may be used in developing the curricular program provides a description and an application illustration for each one. An illustration of how vocational education programs, grades 11-14, could be modified for the gifted and talented student is followed by a list of suggested activities to provide awareness of vocational education opportunities. A brief handbook (part of the document) for a gifted/talented program in vocational education provides program goals, guiding principles for program development, possible problems, and grass roots considerations. A resource section lists organizations and publications. (YLB)

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VOCATIONAL EDUCATION

and the

GIFTED AND TALENTED

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TIPS FOR GIFTED EDUCATORS

In education, there are small bits of truth which are not in textbooks. Following are some truths that can make the difference between success and failure in several years of teaching students.

--Don't hesitate to beat students.

Beat them to possible sources of information in your community. Don't let students "stump" you by talking about places you haven't been. Don't let them bring you books which you haven't heard of.

--Teach them to beg.

The begging I refer to is for information. If, we as teachers, can instill in our students the desire to beg for more and more knowledge, never relying upon piled-up stores, never reaching satisfaction, then we have served them well.

--Teach them to hate.

The student should be taught to hate ignorance, not ignorant people, but the environment of ignorance that binds them. They should hate hypocrisy, envy and selfishness. If they hate these things strongly enough, they will do something about them.

--Teach them to fight.

Students must learn to fight for the things they believe in. One of the great lacks in our time is moral courage. Young and old people are often too afraid to stand up and be counted. We can't teach courage as we teach English, but by precept and example we can inspire students to take the right road, not merely the easy road.

--Teach them to talk back.

One of the first rules the average student learns is, "You should be seen and not heard". But a student who is not heard does not learn. They must question and pry. A teacher should impress upon students the importance of asking intelligent questions, and with relating answers to other things they have learned. Done in the proper manner, talking back is fine.

--Teach them to show off.

Every person likes attention and it should be presented. When a student is shown how to communicate and demonstrate his/her knowledge and talents in a pleasing manner, he/she learns how to serve others and make friends.

<u>If these rules don't fit what you learned from textbooks,</u>

<u>think awhile. Maybe, just maybe, the textbooks were wrong.</u>

INTRODUCTION

To those interested in gifted individuals in general, it is obvious that a great deal needs to be done to help meet the needs of these gifted persons in vocational education.

It would seem relatively easy to defend a need for such programs. The most obvious rational may be because of the sheer numbers of individuals being dealt with. Of the hundreds of thousands, perhaps millions of students a certain percentage is sure to fit into this category. Secondly, a number of studies show that there is a low correlation between creativity and I.Q. as measured on standardized tests. There may be countless students with creative potential in the vocational schools with little to nurture them. Many creative persons are activity oriented. Vocational education has the laboratories to capitalize on this.

How many potentially gifted individuals may not see a relevance to their education in a traditionally academic high school and become "under achievers"? Many figure it is a waste of time and become poor students, some drift around, some may wind up in a vocational school, and some drop out. The point is, many are gifted but are overlooked because of grade scores which they may not care about anyway. The vocational school could be a haven for these individuals. Humanity cannot afford to allow this human potential to be lost.

Definitions

No single concept has been reached on a definition of gifted. There seem to be at least two schools of thought about giftedness. The classic school defines giftedness solely on the basis of superior intellect. A more contemporary position recognizes a broad range of gifts and talents

in defining giftedness. This view is reflected in the federal guidelines of 1970 (P.L. 91-230). Between these two positions a spectrum of other definitions reflects the various attitudes, values, and interests of individuals and groups using the definition (leadership, skill in performing arts, athletics, creativity, and so forth).

Public Law 91-230, Section 806 states: ....Gifted and talented children are those identified by professionally qualified persons who, by virtue of outstanding abilities, are capable of high performance. These children require differentiated educational programs and/or services beyond those normally provided by the regular school program in order to realize their contribution to self and society.

Children capable of high performance include those with demonstrated achievement and/or potential ability in any one of the following areas, singly or in combination:

1. general intellectual ability
2. specific academic aptitude
3. creative and productive thinking
4. leadership ability
5. visual and performing arts
6. psychomotor ability

It can be assumed that utilization of these criteria for identification of the gifted and talented will encompass a minimum of 3 to 5 percent of the school population (Marland, 1972).

Most school programs developed for the gifted have concentrated only on the academically gifted student. Group IQ scores, group achievement scores, teacher recommendations, and grade-point averages have been used by school systems to identify this population. These methods alone or

in combination may potentially overlook or misidentify students. According to Meyen (1978), "in addition to the academically gifted, students may be creatively gifted, psychosocially gifted or kinesthetically gifted." A student may possess any combination of these gifts.

Academically gifted - individuals possessing superior general intellectual ability or specific academic aptitude.

Creatively gifted - individuals who exhibit superior ability in creative or productive thinking. Although depth of intellect generally is associated with creative thought and creative individuals may be high academic achievers, their ability to think divergently and develop new, unique, and original ideas sets them apart in this category.

Psychosocially gifted - includes superiority in political and social leadership and consists of an ability to facilitate attainment of group goals and to improve interpersonal relations within the group.

Kinesthetically gifted - a high level of visual, performing arts or psychomotor skills often is referred to as kinesthetic giftness. Included in this group are the talented artist, dancer, actor, and musician.

Nearly all definitions of the term gifted, prior to 1950, either explicity or implicitly refer to superior intellectual ability. The word talent originally came into use primarily in relation to academic talent. The term creativity began to appear in the 1950's and has been a widely accepted indicator in defining gifted and talented students (Gearhart, 1980).

In 1976 a federal definition appeared:

"Gifted and talented" means children and where

> applicable, youth, who are identified at the pre-school, elementary or secondary level as (1) possessing demonstrated or potential abilities that give evidence of high performance capability in areas such as intellectual, creative, specific academic or leadership ability or in the performing and visual arts; and (2) needing differentiated education or service (beyond those being provided by the regular school system to the average student) in order to realize these potentialities. (Federal Register, 6 May 1976, p. 18666)

Literature Review

There are few references in vocational education literature concerning identified gifted and talented students. The University of South Dakota VE/GT project publications are among the few documents that focus on vocational education for gifted and talented students.

A review of vocational and career education literature points to the following conclusions:

- Vocational education is needed by gifted and talented high school students.
- Almost all student assessments have been paper and pencil measures of cognitive abilities and achievement or performance-based evaluations of artistic and musical abilities. The fact that gifted and talented students are enrolled in and demonstrating outstanding abilities in secondary school occupational training programs, to a large extent, has been overlooked.
- Gifted and talented students need special attention with regard to career education counseling, early career exposure, and a variety of exploration experiences.
- Vocational and career educators in the field of gifted and talented education need to strengthen their skills in identifying students, individualizing instruction, and differentiating programs.
- Vocational counseling for gifted and talented students has been inadequate and has not had a significant role in career education of this group. Several writers in the field suggest that students are counseled away from vocational education. (Milne, 1982)

Identification

A number of procedures have been developed for identifying gifted and talented students but further research and development must accompany changing definitions of the term giftedness and improved identification and understanding of individual learning styles.

The most frequently used identification strategies are:

Checklists
Observations
Standardized Tests
Referrals
Case Studies
Interviews

All methods of identification have shortcomings and these must be taken into consideration when establishing an identification program.

TABLE 1

SUMMARY of METHODS of
IDENTIFYING GIFTED STUDENTS

	Limitations
Observation	May miss underachievers, culturally deprived, motivational problem, emotional problems and children with belligerent or apathetic attitudes toward the school program. Definitely needs supplementing with standardized test of intelligence and achievement.
Individual Intelligence Tests	The best method but expensive in use of professional time and services. Not practical as general screening tool in schools with limited psychological services.

	Limitations
Group Intelligence Tests	Generally good for screening. May not identify those with reading difficulties, emotional or motivational problems or cultural improvement.
Achievement Test Batteries	Will not identify underachieving gifted children. In addition, same limitations as group intelligence tests.
"Creativity" Tests	New and uncertain validity. Shows promise of identifying the divergent thinker who may be overlooked on IQ tests. May be too narrow in scope to be used without being supplemented by other measures.

In an effort to identify gifted/talented students in vocational education, giftedness can be broken down into nine categories and characteristics of the categories can be identified. (Renzulli-Hartman Scales)

I. Academic Characteristics

*verbal proficiency which demonstrates an understanding of the breadth of knowledge

*avidness for reading with a high degree of comprehension

*ability to transfer knowledge to new situations

*application of analysis and synthetis skills to problem-solving

*proficient use of evaluation skills

*tendency to pursue learning with own direction

*intense curiosity to know "hows" and "whys"

*a continuing questioning attitude

*extremely quick mastery of content

II. Aesthetic Characteristics

*displays concery with right and wrong, good and bad, people and behavior

*is intensely idealistic and optimistic about solutions to social, political and economic concerns

*has strong aesthetic experiences in viewing the phenomena of nature, human interaction and the developmental process

*is sensitive to forms, colors, patterns and symbols which are aesthetically satisfying to other people

*possesses an excellent sense of humor

*is usually interested in art, music, dramatics, literature and poetry

*is both versatile and virtuous in interpersonal relations, is open and honest

*thinks clearly, recognizes implied relationships, comprehends meanings in art, literature, music and poetry

*displays sensitivity to beauty, is conscious of the aesthetic values as well as the practical

*becomes intensely committed to causes or concerns related to interests ... environment, conservation, equality, rights

III. Creative and Productive Characteristics

*displays high degree of curiosity about many things

*recognizes problems quickly, is flexible in higher thinking, seeks solutions by striking out in new directions

*is not only a thinker but also a producer of original ideas, products and materials

*finds new uses for old objects and materials, seeks value in things discarded by others

*possesses an intense desire to solve problems that baffle others, with endless quest for new challenges and solutions

*is a high risk taker, adventurous and speculative

*is imaginative, fantasizes successful means of problem solving

*is intelligent (broadly defined), has strong theoretical and aesthetic interests

*has a strong sense of density and self-confident

*is intuitive, responds quickly to sense stimulation, openness to experience

*works well alone, is independent (in thought and action), often seen as a "loner"

IV. Decison-Making Characteristics

*exhibits an intense power of critical thinking, skepticism and evaluative testing

*shows superior judgement in evaluating relationship between and among data and things

*has a keen ability to reason things out and sees consequences of courses of action

*has the ability to generate alternatives rapidly

*has the ability to view many alternatives, suspend judgement until relevant information has been gathered from many sources

*has an ability to use graphics involving symbols which lead to sequential decision-making processes

*has a keen ability to predict outcomes or foresee difficulties which will require future adjustments and new solutions

*displays an adeptness at applying the "scientific method" in problem-solving

*recalls and applies information which has been heard or read

V. Leadership Characteristics

*ability to help a group reach its goals, improve its relationships, and achieve prominence

*ability to assert power of influence on decision-making, opinions, thoughts and action

*ability to organize time, work and people

*tendency to dominate others, generally directing the activity

*ability to carry out responsibility well, tending to do as well as directed

*ability in planning, facilitating and structuring situations

*ability to express views well and influence others

*ability to listen to the views of others, synthesize ideas and communicate them to the group

*awareness of group goals, avoiding aimless and pointless dialogue

*ability to conceptualize the "big picture"

*ability to instill confidence with an innate sense of justice

VI. Social Characteristics

(a) Toward Self

*independent, individualistic, self-sufficient

*self-critical, self evaluative, striving for perfection, satisfied with own speed and production

*non-conforming, accepting disorder, not concerned about what others think or say

*independent in work and study, preferring to work alone, needing freedom of movement and acting self-reliant

(b) Toward Others

*possesses few close friends

*associated with older people and deals with problems at an adult level

*is friendly, outgoing, open

*is selective in social activities, basically a non-joiner

*displays humor, playfulness and relaxed appearance when not in a creative or productive process

*is sensitive to, emphathetic toward and intensely aware of the group need of individuals and groups

*alternately needs and avoids social contact

VII. Physical and Emotional Characteristics

*are well coordinated and excel in athletic activities

*possess mechanical skills which require high degrees of manipulative and special ability

*perceive visual patterns, details and minute differences (spatial relations)

*display a positive self-image and are self-confident

*have a high energy level, are alert and eager to participate

*expand seemingly limitless energy, spend periods of intense voluntary effort preceding invention

*often wish to work alone and are sufficient unto themselves

*require less sleep and restore energy levels quickly

VIII. Intellectual Characteristics

*the use of a large vocabulary, accurate use of words with a comprehension of their meaning

*rapid insight into cause-effect relationships

*is an effective trouble-shooter

*keen power of observation and willingness to examine the unusual

*ability to conceptualize and synthesize

*preference for complex ideax, systems and working with abstractions

*eagerness for problem situations which challenge the ability to reason

*inquisitiveness about "why's" instead of "what's"

*tendency to ask provocative questions and to be intellectually curious

*preference for complex games such as chess, use of numbers, puzzles

*keen alertness to significant data

*intense power of concentration accompanies by long attention span

*highly logical and is often intolerant of illogic

IX. Work Pattern Characteristics

*has extremely long attention spans and the ability to pursue an activity in which he/she is interested for extra long periods of time

*becomes absorbed and truly involved in certain activities or problems

*displays tremendous power of concentration

*is persistent, resourceful and self-directed

*delves into interests beyond the usual limitations

*is easily bored with routine and drill

*needs little external motivation to follow-through in areas which initially excites him/her

*possesses an ability to organize the work procedure, budgeting time and resources

*has liking for structure but can tolerate disorder and ambiguity

*is critical of the quality of his/her own effort and production

*disposes (absorbs) quickly of preliminary, fundamental and/or elementary knowledge, skills and processes

THE VOCATIONAL EDUCATION TEACHER
and the
GIFTED and TALENTED STUDENT

Vocational education teachers might wonder if they are qualified to serve as teachers of the gifted and talented student. Certainly, a vocational teacher may do much to teach the gifted and talented student. However, all of the teacher's preparation now available is probably not enough without one other ingredient, Torrance (1965) explains: "They (knowledge, techniques and procedures) must be combined with your own potentialities and the needs of your own pupils in such a way as to become your own unique invention, your way of teaching. This unique invention of the teacher is tremendously important in the teaching of gifted children to help them discover and become their potentialities."

The gifted and talented student possesses many interests and the ability to pursue the majority of them. One of the functions of the instructor will be to analyze each proposed deviation from the regular curriculum and then to determine if the deviation is advantageous to the student's curriculum and career goals.

There are no magic formulas to be prescribed for the vocational educator in preparing him/her for teaching the gifted and talented. There is, however, information available through courses and/or independent readings.

The following is a guideline for the vocational teacher to use in preparation for meeting the needs of a gifted and talented student.

Things to Do	Things to Know
1. Identify gifted and talented student	1. a. Characteristics of gifted and talented

Things to Do	Things to Know
1. Identify gifted and talented student	1. b. Types of data available within school to assist in identifying the gifted and talented c. Personnel within school system available to assist in identifying gifted and talented
2. Develop a professional relationship (teacher-student) with the gifted and talented student	2. a. Factors that tend to cause gifted and talented students to hide or dampen their ability b. Ways of motivating gifted and talented students to achieve in relationship to their ability level c. The unique characteristic and motivation factors of the gifted and talented student under consideration
3. Differentiate the curriculum to better meet needs of gifted and talented student	3. a. Methods and techniques used to differentiate the curriculum b. School constraints which limit methods and techniques of differentiating the curriculum which may be utilized c. The methods and techniques of differentiating the curriculum (that are viable alternatives in school system) that best meet the needs of the specific gifted and talented student d. The vertical articulation and horizontal movements a gifted and talented student might be able to pursue related to the vocational education program in which the student is enrolled

Things to Do	Things to Know
4. Implement plan of action to differentiate curriculum for gifted and talented student	4. a. How to evaluate the success of the differentiated curriculum for the gifted and talented student

GUIDELINES FOR THE PROGRAM

Attention should be focused on such critical points as:

Initiation - - The approach should be open and honest and not become unduly restrictive. The instructors and the participants should be informed as to what they are to do and given the freedom to innovate or create an action program.

Planning - - The planning of any program change should involve those who are to perform the services and those who receive it. In developing a program of pupil progress which varies from the traditional approach, it is vital that the primary purpose of the program, training and experience for the world of work not be diminished.

Orientation - - The educators involved should be given all possible consultant services in the planning and development of program adjustments. Consultant services should be realistic in terms of practices which are possible within the present structure, curriculum contents and instructional methods.

Finances - - Any program change requires some additional expenditures. Funds must be made available for in-service training, planning and initiating a program. Unless some funds are made available the services to the gifted will fall short of their true purposes.

Personnel - - A careful analysis should be made of the personnel available both in the vocational education instructional staff and the support staff. The people who are expected to accept leadership responsibility must be willing to accept the challenge to try. No amount of training or planning will help the gifted unless the instructional staff are committed to the program.

Resources - - Similar to finances, any program adjustment will require additional resources . . information,

materials and personnel. The instructional staff should be encouraged to seek out and use persons with expert knowledge in business, industry, agriculture and labor to reinforce the differentiated program.

Credit vs. Competency - - The problem of granting credit or reaching desired levels of competencies cannot be treated lightly or sloughed off easily. The instructor and the gifted student should be in agreement as to the standards which must be met for completion of skill training and experiential activities. Depending upon the criteria established for proficiency in the skill area, the instructor and the student should be given the freedom to negotiate the depth and breadth of meeting those requirements. It is nonsensical to believe that the gifted and talented student will not require differentiated programming. At the same time, the levels of comptency in any given skill area must be maintained.

Reinforcement - - Both the instructor and the gifted student must be assured the support of the administration. In all probability staff members and other students will question the "preferential treatment" given to the gifted student. The instructor and the student must be allowed the time and freedom to develop the gift and/or talent to its fullest potential. Support and encouragement from the administration can be the necessary reinforcement to bring about success.

Policy - - From the very beginning any program adjustment must be established by school policy. There are certain administrative and "due process" regulations which govern the initiation and execution of any program that deviates from the "regular program." Such matters as parental consent, variations in attendance, away from school activities, and extended privileges must be approved by "board policy." Insist that the governing board adopt policies which govern any differentiated programs.

Legal Ramifications - - Vocational education for the gifted and talented must abide by the various local, state, and federal laws which relate to an educational program. This includes legislation such as affirmative action, sex discrimination, and family rights and privacy. Since the vocational education program for the gifted and talented will involve a differentiated/enriched/individualized curriculum, there is both a legal and/or moral responsibility that the educational institution has in informing the parents of students under age 18. The vocational educator and/or educational institution would be well advised to secure legal counsel regarding state laws prior to the implementation of a differentiated curriculum.

Evaluation - - Because the instructors will be responsible and accountable for any program changes or alterations, it is clearly evident that some documentation is needed. A clear statement of program intent should be set forth in measurable performance objectives, intermediate and terminal measures as to whether those objectives are being met should be built-into the teacher-learner agreement or contract. Evaluation for any form of individualized instruction should measure where the student is at the start and what growth occurs. If a program is truly individualized and differentiated, the evaluation, too, should be individualized and differentiated.

A BRIEF SUMMARY of PROGRAM GUIDELINES

- Involve the vocational education instructional staff in planning and developmental decisions.
- Involve the gifted students in the planning and development processes.
- Tailor the program to fit the needs of the gifted student in the framework of the established program.
- Allocate both financial and material resources to insure program success.
- Start with in-service training and allow time for growth and development.
- Involve other staff and community resource people.
- Maintain flexibility in the program.
- Establish clearly the purposes and procedures under which the program will operate.
- Insist on adopted policies to govern the program.
- Make provisions for accountability through documented evaluation.

CURRICULUM and INSTRUCTION
FOR THE GIFTED and TALENTED STUDENT

The gifted and talented students who enter the vocational education programs at either the high school or post-secondary level will be a heterogeneous group. Because of the diversity among the gifted and talented, it is not desirable to prescribe a "recipe" approach for the development of the curriculum or the instructional methods for the gifted and talented student(s) in vocational education. For this reason, information of value to the development of the curriculum and instructional methods is presented. The instructor, aided by other professionals, should assess each gifted and talented student in making a determination as to the best alternatives for the student. The instructor will, however, be the one who manages and supervises the master plan for the gifted and talented student's program.

Instructional Alternatives

The four major curriculum approaches utilized in providing programs for the gifted and talented students are:

- .ability grouping the gifted and talented into special classes
- .accelerating the gifted and talented students through the regular program, through the use of individualized instruction
- .enriching the regular curriculum for the gifted and talented student
- .differentiating the curriculum by adding content not found in the typical curriculum, but content which enhances the students employability and promotability

Ability Grouping - Under this approach the students are selected on the basis of some predetermined criterion to pursue a special class(es)

and/or curriculum. For the gifted and talented, the instruction would provide both acceleration and enrichment.

The two major difficulties encountered with this approach are: (1) the gifted will still differ in abilities, interests, aspirations, and life-goals relating to criteria not utilized in making the selection; and (2) there would typically not be sufficient numbers of students in the majority of the communities to justify the establishment of special vocational education programs for the gifted and talented.

It should be noted that if the numbers problem can be overcome that there is merit in this approach. Torrance (1965) stated, "In summary it must be admitted that research on ability grouping, as crude and as undifferentiated as it has been, has generally shown that the academic achievement of gifted students in narrow range ability groupings tends to be somewhat greater than in broader range ability groups (heterogeneous)."

Acceleration/Individualization - This approach assists the gifted student in advancing through the educational program in a shorter period of time than the typical student. Thus, the student is ready to enter the labor market or advanced educational placement at an earlier age.

Since vocational education is designed to prepare the student for employment, the earlier employability date increases the individual's productivity and earning power. It should be noted, however, that the student could conceivable complete an accelerated program (including a two year post-secondary school program) at an age less than 18 years and find it difficult to secure employment because of labor laws.

The acceleration approach has received consideration by many educational institutions as they view methods of meeting the needs of the gifted and talented. However, as noted by Gallagher (1964), "At some time during the career of bright children . . . the question will be

raised by parents or teachers as to whether they should be accelerated in school. To both parents and educators, this has been a problem of continuing concern."

The typical method used to accelerate the student is through individualized instruction. This method of instruction provides the student with the learning materials, usually multimedia, and the student proceeds through the established learning packet or module at his/her own pace. The goals are stated not in what the instructor intends to accomplish, but what a student will be able to do, how he/she will do it, and what level of achievement must be attained. (Campbell and Kush, 1974)

Individualized instruction units are generally arranged in short, easy-to-follow sequential steps that assist in successful learning. The student may utilize the resources available for that unit of instruction. Ideally, the units are so organized and used that the sequential steps are systematically evaluated. When the student reaches an expected degree of proficiency or competency, the next step begins.

Variations in student progress can be built into individualized instruction by using pre- and post-tests. A student may pre-test through some of the more rudimentary levels in the learning unit and begin at the level where competencies are lacking. Conceivably, a student can take the post-test and, by satisfactory completion, by-pass the unit altogether. Most units, however, contain some practical or construction work which must be produced as part of the learning experience.

Numerous learning packages are available commercially for instruction in each of the occupational clusters and skill areas. The values in this type of instruction are that the student is an active participant in the learning process and that through pre- and post-testing, the amount of learning can be measured.

Enrichment - "Most generally approved among the four curriculum alternatives has been enrichment. Its advocates, however, have not been able to produce as good research support as have advocates of special groups and acceleration," said Torrance (1965).

This approach maintains the gifted and talented student with his/her peer group and in the regular curriculum with special supplemental activities and endeavors for the gifted and talented student. As the current pressures for "mainstreaming" mounts, enrichment will become a more desirable alternative to ability grouping.

The enrichment approach would provide the student with greater insights, depths of understanding and application of the curriculum content. It would, however, limit the student to the units/topics in the regular curriculum. The student would invest free time (time available because of completing the unit/topic ahead of other students) in enrichment activities relating to the job skill being studied. When the class moved to a new unit/topic, the gifted and talented student would again join the class until he/she had the requirements for the new unit completed. At that time enrichment activities could again be pursued.

Differentiated Instruction

Individualized instruction does allow student participation and the freedom to self-pace the learning unit. A total program of instruction usually consists of using a series of learning units in sequence and building skills within an established course of study. Even though there may be a variety of alternative units, they are still part of that course's framework.

Differentiated instruction draws learning experiences from a variety of different courses which may draw learning units from a completely different occupational cluster, depending upon the student's interests and needs.

The difference between individualized instruction and differentiated instruction is that of varying the learning areas rather than the method of instruction.

METHODS and TECHNIQUES of INSTRUCTION

Vocational educators may utilize many different methods and techniques in developing the curricular program for the gifted and talented student. The following listing is presented as examples and not as a complete listing of alternatives available. It is hoped that it will provide guidance and motivation for the instructor as he/she prepares to assist the gifted and talented student in a vocational education program. The listing is not in any priority or specific order

Methods/Techniques	Application/Illustration
1. Contract Learning -- "...the approach enables each student the opportunity to shape a program around his or her needs, interests, prior achievements, capabilities, and aspirations," Gross (1976).	1. A student in the advanced phases of an accounting program could enter into an extra credit contract with the instructor and by utilizing created or actual data conduct an analysis of the financial records of a specific business to determine whether such a system is adequately meeting the needs of that specific business in terms of recording, reporting, analyzing, and interpreting the financial data of the company in assisting the businessman in making the decisions that he must make from day to day.
2. Self-Initiated Learning -- The student seeks out an instructor and resources necessary to facilitate the student learning a specific skill, knowledge or concept.	2. The student in an agricultural program might further his/her knowledge in artificial insemination through a self-initiated learning. This might be accomplished by the student contacting a veternarian and making arrangements to meet with him to obtain specific knowledge, to secure booklets and pamphlets from the veternarian for study purposes and to observe the veternarian as he performs artificial insemination.

Methods/Techniques	Application/Illustration
3. Learners Without Teachers -- The student is provided a study guide by the institution which he/she follows in studying on his/her own. To complete a course or program, the student must pass a comprehensive examination and/or demonstrate abilities and competencies.	3. A culinary arts program may enroll a gifted and talented student who desires to enrich his/her program and occupational preparation by learning the speciality of making pastries which is not included in the regular curriculum. Through the technique of learning without a teacher, the student could be provided a study guide, reference materials and access to a supervised laboratory. The student would progress on his/her own in learning this speciality while pursuing the regular culinary arts program and be evaluated through a comprehensive examination and demonstrated skills.
4. Cooperative Education -- The student is employed part-time while in school or full-time for short periods of time by a business or firm and performs tasks that draw upon and enrich the student's educational preparation. The student is employed under an agreement between the student, employer and school which includes an outline of the experiences to be gained through the cooperative program.	4. The cooperative education method could be utilized to enrich any vocational education where related employment could be secured. This method could be utilized during the summer months when the regular school term is not in session. It provides a "real world" environment for the gifted and talented student to apply his/her knowledge and skills.
5. Mentor Counselor -- A knowledgeable and experienced person in the gifted and talented student's field of interest provides the student with counsel, guidance, opportunities to observe, answers to questions and assists the student in accomplishing his/her educational and career goals.	5. The mentor counselor could provide a significant avenue of enrichment for a student in a high school nurses' aide program. Through the mentor counselor, the student could become better informed about vertical articulation opportunities and educational requirements for the various employment opportunities in the health field.
6. Research Projects -- The gifted and talented student conducts a research project in his/her area of interest under the guidance and counsel of a more	6. A research project may be utilized in enriching a distributive education program. The student might select a given product and conduct research on customers' attitudes,

Methods/Techniques	Application/Illustration
knowledgeable individual. The project might provide enrichment to the curriculum being pursued or relate to supportive process enrichment.	likes, and wants and from this information develop a marketing program designed to increase sales of the product.
7. Response Environment -- The gifted and talented student is provided an opportunity to use free time (while other classmates are completing required work) to work with equipment, instructional materials or concepts that are significantly more advanced than the student's educational background. Through the challenge of not understanding and the desire to know, the student is led into enrichment type educational experiences.	7. The gifted and talented student in an air conditioning and refrigeration program could enrich his program by delving into a study of solar furnaces. The activities might include research study on solar furnaces followed by developing a model solar furnace to be utilized in conducting experiments on the concept.
8. Youth Organizations -- The vocational education youth organizations provide enrichment opportunities for the gifted and talented. Fitzpatrick (1976) states that "students are encouraged to excel by participating in both leadership and skill areas. The American VICA degree, the highest award that may be earned while in school, recognizes students who do equally well in both areas." The enrichment opportunities through VICA are similar to those available through the other vocational education youth organizations.	8. The youth organization approach provides an excellent opportunity to supportive process enrichment to any vocational education curriculum. Here the gifted and talented student may increase competencies in public speaking, conducting meetings, personnel management and organization, to list but a few.
9. Community Project -- The gifted and talented student may find enrichment experiences to supplement in school activities through a community project. The project pursued (political, social, recreational, civic, etc.) will determine the type of enrichment the student will receive and the relationship to the student's curriculum.	9. The gifted and talented student in a business management program could enrich his/her program by developing and carrying out a community project. An example might be the planning, organizing and conducting of a seminar for local businessmen. The topic could be identified by the student through contact with a representative, sample of businessmen and the content for the seminar provided by resource people.

Method/Techniques	Application/Illustration
10. Individualized Instruction -- The many different approaches to and variations of individualized learning all provide avenues to be utilized in providing enrichment experiences for the gifted and talented student. This approach might include the use of audio tutorial materials, programmed materials, learning activity packets and any of the other either commercially produced or teacher developed materials.	10. The student in a manufacturing technology program might enrich his/her program by pursuing through individualized study specific units of Tech. Physics which relate to manufacturing. The added knowledge gained through the Tech. Physics would enhance his/her understanding of materials and material processing and to the employability of the gifted and talented student upon graduation.
11. Development of Higher-Level Cognitive Processes -- The student is provided an opportunity to learn and practice the skills related to the processes of analyzing, synthesizing and evaluating both as separate processes and as processes which are part of the strategies of problem solving, critical thinking and creativity.	11. A student in a Home Economics course in cooking could be provided an opportunity for enrichment through doing experimental cooking. This would allow the student an opportunity to experiment with different ingredients and different proportions with the results being analyzed and and new recipes developed.
12. Accelerated Content -- This approach allows the student to work with knowledge and skills which correlate with the student's mental rather than chronological age, parallel his/her interests and satisfy his/her need and quest of substantive information. The student would advance through the regular curriculum in less time than the typical student.	12. A high school junior in a vocational Electronics program would be allowed to accelerate beyond the other students in the class. Through this approach, the gifted and talented student would not go beyond the regular curriculum but might complete the two-year high school vocational education program in one year.
13. Higher Degree of Complexity Content -- The student does not advance ahead of the class to other units of instruction in the program but concentrates additional time in pursuing additional depth in the unit being studied. The student may concentrate on proof of theories, application of theories	13. Hydrology and Drainage is one course typically found in a Civil Technology program in which units of instruction for gifted and talented students could be added. For example, elementary hydraulics and the hydrologic cycle are units in the regular course of instruction. Ordinarily, the principles of hydraulics are not applied to

Method/Techniques	Application/Illustration
or greater depth of study of specific details.	the study of the hydrologic cycle; there is not adequate time for this and it requires training beyond the level of the average student enrolled in the course. However, it is conceivable that units could be designed for a gifted and talented student which include the study of elementary hydraulics, the hydrologic cycle and a blending of the two, to include methods of: (1) conducting ground water investigations (2) controlling reservoir sedimentation (3) preventing channel and dam scour A student with this additional training would acquire language and skills beyond what is normally obtained in preparation courses, and, above all, would be a greater asset to an employer involved in water-resources engineering.
14. Working With the Abstract Concepts in A Content Area -- The student enriches his/her program by dealing with abstract ideas, theories or concepts which are inferred or discrete in the unit of instruction and which require reflective, critical and/or creative thinking in order to make them concrete, give them meaning or make them applicable to practical situations.	14. The study of display design provides the gifted and talented student with an opportunity to go beyond the regular curriculum in studying the various abstract ideas and concepts utilized in display design work and to make practical applications of the various design concepts.
15. Advanced Levels of Resources -- The student is allowed to seek out and to utilize resources either human or material that go beyond the resources reserved or designated for the regular curriculum.	15. The gifted and talented student in an architectural drafting program could advance his/her knowledge of structural theory through the utilization of textbooks in the area of structural analysis technology. This would strengthen the student's preparation in statistics, the basic concepts of structural theory and their applications to statistically determined structures.

Method/Techniques	Application/Illustration
16. Creating or Generating Something New -- The student utilizes knowledge and skills obtained through regular program and/or enrichment activities to create or develop something new.	16. The student involved in a unit of instruction utilizing the surface grinder could work on developing and making a fixture, for the surface grinder, designed to be utilized in re-conditioning worn out milling machine cutters. This would involve special mathematical computations and special machine set-up on several other machines.

AN ILLUSTRATION OF HOW VOCATIONAL EDUCATION PROGRAMS, GRADES 11-14 COULD BE MODIFIED FOR THE GIFTED AND TALENTED STUDENT

Level in School	Type Vocational Education Enrollment	Methods/Techniques for Accelerating Students and/or Enriching the Curriculum	Terminal Goals for Students
High School Junior (Grade 11)	Enrolled in the 2-year in-school vocational education program	1. Individualized Instruction 2. Contract Learning 3. Mentor Counselor 4. Youth Organizations	To complete the requirements of the 2-year in-school vocational education program in one academic year
High School Senior (Grade 12)	Enrolled in vocational education ccoperative education program	1. Mentor Counselor 2. Research Project 3. Youth Organization	1. To obtain actual employment experiences which utilize knowledge and skills gained through in-school vocational education programs 2. To increase depth of understanding in vocational field & to expand breadth of knowledge in vocational field and in related areas
Post-Secondary Freshman (Grade 13)	Advanced placement within the in-school post-secondary vocational education program	1. Advanced Placement 2. Mentor Counselor 3. Youth Organization 4. Community Project	1. To complete the requirements of the in-school post-secondary program in one academic year 2. To increase the breadth of understanding in vocational and related fields
Post-Secondary Sophomore (Grade 14)	Enrolled in vocational courses which complement student's vocational area and individualized study courses in student's vocational area	1. Problem Solving Research Project 2. Youth Organization 3. Mentor Counselor 4. Individualized Instruction	1. To increase depth and breadth of knowledge and skills in vocational area 2. To increase depth and breadth of knowledge in areas supportive of vocational area

AWARENESS of VOCATIONAL EDUCATION OPPORTUNITIES

The following are some suggested activities or process by which vocational educators and other school personnel may acquaint students, parents and community adults with opportunities in Vocational Education.

Buddy, Big Brother or Sister Day - - Each student enrolled in a vocational preparation program brings a younger boy or girl (grades 7-10) to a regular day of classes or activities. This could accompany Career Education orientation phases.

Field Trip Programs - - Establish an interesting excursion or tour plan which can accomodate small groups from grades 7-10. Extend invitations to classes in junior high or high school to visit the classes and training programs in action. Enrich, expose and extend awareness of the vocational opportunities.

Parent-Student Participation Night - - Each student at the secondary level of vocational preparation is encouraged to bring one or both parents for awareness purposes. Encourage the parents to ask questions and participate in activities. They may become program advocates and extend the word.

Interest Sessions or Mini Courses - - Invite men and women from the community or students from the school to participate in a series of three 3-hour sessions on a topic or activity which would be of interest to them as house holders, green-thumb enthusiasts, nature lovers, etc. A brief exhibition or demonstration of an activity maybe followed by active participation: food preparation, scuba-diving, animal care, flower arranging, wine making. The activities should be related to the types of vocational preparation programs offered at the secondary or post-secondary institution.

Role-exchange Programs - - Invite selected individuals from the work field to participate in the instructional program while the instructor replaces him/her on the job. Both may learn something valuable for their own jobs. A similar exchange can and should occur between members of the school instructional and administrative staff. The intent of role-exchange programs is to actually involve the participants in each other's roles, not merely become spectators.

Awarding of Scholarships and Stipends - - As within the academic and athletic arenas, vocational educators should be encouraged to extend tuition-break scholarships to graduating seniors. Many private business colleges, trade schools and industrial groups have established such programs. Such scholarships are enough incentive to cause some students to make the final decision about what to do after graduation. Alumni funding of the scholarships or stipends takes time and promotion, but the long range benefits are worth the effort.

Visibility Campaigns - - Public acceptance of vocational education has been hindered in many communities by lack of visibility. Many resources are available on public relations, promotional campaigns, exposure techniques, etc. A visibility campaign should consist of long-range planning which includes the use of public media, news letters, open-houses, and person-to-person contact.

Service Club Visits - - The typical approach to working with service clubs or organizations has been to provide a vocational education speaker and a slide or film presentation. In each of these it is the vocational educator that goes to the service club meeting. It suggested here that the service club be invited to visit, observe, and participate in the vocational programs at the secondary or post-secondary institution. Similar invitations should be extended to schools or youth groups such as the student council, honor society, 4-H clubs, and scouting organizations.

HANDBOOK FOR GIFTED/TALENTED PROGRAM
IN VOCATIONAL EDUCATION

What Should a Gifted and Talented Program Try to Achieve?

The goals for a program for the gifted may be determined by the individual school system. This may include the board of education, school administration, teachers, parents, students and community groups. Some considerations should be kept in mind when establishing such programs. One of the main reasons for gifted education is to allow interaction between gifted students. The program should insure that the gifted students get together on a regular basis. This does not necessarily have to be every day, but some regularly scheduled interaction. Gifted students should also get together with children of mixed abilities on a regular basis. This is a typical situation which exists in most vocational classrooms. It must also insure that gifted students have an opportunity to work independently.

A program for gifted/talented students should try to help the individual become aware of him or her self. There is a need to try to strengthen the self concept of people. Quite often gifted people who are underachievers have a poor self concept.

Several Guiding Principles in Developing a Program

First, individuality must be respected and responded to. This can be done by educational action.

a. Recognize a need to develop the program.

b. Make resources for development available.

c. Foster flexibility in the teachers. If a gifted child is taken out of class, perhaps he or she shouldn't have to make up all the work that is messed. We may be asking children to enjoy to work and to extend themselves on the one hand, and penalize them on the other hand.

d. Try to promote open-mindness in the skeptics. These include other students, faculty and administration. Learning can be enhanced by the following:

1. Allow students to experiment and explore unknown areas.

2. Expose students to a variety of environments and experiences.

3. "Turn on" the student and get out of the way, let them extend themselves as they see fit.

4. Emphasize advance levels of operations in problem solving.

5. Let the student be involved in his or her own destiny. At times, let them study things that are important to them.

Some characteristics of the educational process should be considered.

a. In addition to the student extending him or herself in their major vocational subject area, some activities should be interdisciplinary. Their work can cross course departments.

b. Occasionally there should be non-graded experiences. This will eliminate or reduce the threat of grades. Society is generally anti-failure, thus reducing the willingness or desire for experimentation. Creative problem solving lends itself to experimentation.

c. Instructors should develop open-ended objectives in their curriculum to include broad questions and assignments. Let the student go beyond what is expected.

d. The experiences for the gifted should be on going throughout the school year.

It is necessary to address the needs of the creative individuals who are of a racial minority or non-English speaking students. All creative students should be identified regardless of racial or cultural differences. It may necessitate supportive services before gifted children are brought into the system; i.e., Spanish speaking students may need to gain certain basic English competencies before being included in creativity activities or experiences.

The learning opportunities in a regular curriculum should include:

a. Exposure - the students should be exposed to experiences outside the regular curriculum. The grade levels or ages need not be matched. The subject materials should include those which are new and unusual.

b. Extending - extend what the subject area is normally about. The students should have the opportunity to elaborate on the regular curriculum through additional working time; additional materials; additional learning activities; and the opportunity for self-initiated and/or self study.

c. Development - the students should be provided with instruction which focuses on a thorough or new explanation of a concept or skill which is part of a general learning activity within the regular curriculum.

Considerations Unique to Vocational Schools

In beginning any program, some difficulties are sure to occur. A number of problems have occurred in beginning programs for the gifted and talented in academic schools. These and problems unique to vocational schools may indeed occur. There may be problems which can't be solved easily. However, if they can be broken down into smaller, solvable problems the program can be continued. Following are a few problems to be aware of which may be unique to vocational schools.

a. The Problem of a Teacher's Humble Self-Concept

Most vocational teachers have a humble point of view of their discipline and do not perceive it as contributing anything to the gifted and talented student. This must be changed. Teachers must become aware of the special talents necessary in their work and try to recognize the students who have acquired, or have the potential to acquire, these talents in abundance.

b. The Problem of Stereotyping Subject Areas for the Gifted

Stereotyping subject areas for the gifted must be guarded against. That is, in order for an individual to have a gift of high intelligence he or she must excel at math or science. It is also thought individuals having a gift of being creative he or she must excel in art or creative writing. Students who are intelligent and/or creatively gifted may be found in any of the subject areas of vocational education.

c. Underachievers and Discipline Problems May Be Gifted

Teachers may scoff at the thought that a student who is a constant discipline problem and perhaps fails a number of courses could be gifted. Students who are underachievers and/or discipline problems are usually overlooked as being creatively gifted or talented. This is not to say all discipline problems or underachievers are gifted. However, a number of problem students, including dropouts, may, in fact, be extremely talented individuals. Part of the behavior pattern may stem from frustration between the incompatibility of teaching methods with its system of rewar rewards, and the students learning ability or disability. Quite often creative children need to talk as much in class as they do outside of class. Usually, talking in the classroom is considered bad behavior. Some gifted students may have a reading disability. This in turn affects most other subjects and may place the students low in class standing. To further complicate things, the students may be destructive as an extreme reaction against the system which is not meeting their need. Yet, these students may have a very special talent in organization, manipulative skills, problem solving or as a social leader. (A social leader need not be socially acceptable, i.e. gang leader, etc.)

d. Vocational Programs Vary a Great Deal

Traditional academic schools are fairly consistent in their schedules. The vocational schools seem to vary much more. Some vocational schools offer all subjects on one site. Others only offer the technical subjects and students are transferred to another school for general education subjects. Some traditional schools offer vocational subjects and so on. Care must be taken to consider programs for gifted/talented students regardless of the organizational structure. To "let the other group do it" may be a convenient way to look away from the problem, it certainly will do nothing to help meet the needs of these individual students.

Grass Roots Considerations

One of the first steps necessary in beginning a program for the gifted in vocational education would be to identify a teacher(s) or a member of the administrative or guidance staff to be responsible for the program. A team has the advantage of generating more ideas for the program in a group effort rather than a single individual. The responsibilities can also be divided which can reduce the burden on one individual.

The team can coordinate activities, oversee and accumulate curriculum materials, and be the individuals with which students can identify the program. The team should also maintain close contact with parent groups associated with the program. They could also maintain contact with civic and/or industrial organizations.

Parent Group

Consideration should be given to establishing a parent group early in the planning stage for a gifted program. A parent group offers a number of advantages. They can provide assistance to the teacher, perhaps to the extent of being a teacher aide at times. They can offer suggestions as well as acting as a sounding board for new ideas. The utilization of parents would also enhance the image of the program as well as that of the school in the community.

Consider the Scope and Size

In planning a program several factors should be considered relating to scope and size. For instance, how many students will be involved? How often will they meet together periodically and for how long? Will the program cross grade levels? If it does (which is perfectly alright), how will the program progress in succeeding years?

Potential Problems Which Should Be Avoided

Care must be given not to make students "snobs" in that they think they are superior individuals to other students in the school. A long-range problem which can arise is one with parents of students who are selected to be in the program for the gifted one year and not selected the next year. Some parents would be proud of having their child

selected into the program and may boast quite a bit about it. If their child is later dropped from the program, they may find this quite difficult to accept. A logical rationale should be developed for selecting students into the program and if this would be carefully explained, a great deal of embarrassment may be avoided.

Foster Flexibility

A number of people will be skeptical about such a program. An attempt should be made to open their minds toward the program. It is necessary to foster flexibility of other teachers in the school. If a gifted child is taken out of class, perhaps her or she shouldn't have to make up all the missed work. Otherwise, we are trying to extend students and enjoy work in one hand and penalizing them in the other. In addition to promoting open-mindedness in teachers, we must also promote open-mindedness in other students and the school administration.

Fostering flexibility in participating teachers should also be encouraged. Some experiences should be non-graded. This could encourage students to experiment and explore unknown areas. The students should be encouraged to explore unknown areas. Open new horizons to the student and expose them to a variety of environments and experiences.

Growing Pains

Few programs, if any, run completely smooth from the beginning. Problems will arise, some foreseen and some unforeseen. When evaluating the program, keep in mind that the primary consideration is that the needs of the student should be met. Teaching difficulty and administrative problems are secondary.

RESOURCES FOR EDUCATING GIFTED AND TALENTED STUDENTS

Organizations

American Association for Gifted Children
15 Gramercy Park
New York, New York 10003

American Mensa, Ltd.
1701 West Third Street, Suite 1R
Brooklyn, New York 11223

Center for the Study & Education of the Gifted
Box 170
Teachers College, Columbia University
New York, New York 10027

Council for Exceptional Children
1920 Association Drive
Reston, VA 22091

Creative Education Foundation
State University College at Buffalo
Chase Hall
1300 Elmwood Avenue
Buffalo, New York 14222

The Gifted Child Research Institute
300 West 55th Street
New York, New York 10019

National Association for Creative
Children and Adults
8080 Springvalley Drive
Cincinnati, Ohio 45136

National Association for Gifted Children
2070 County Road
St. Paul, Minnesota 55112

National/State Leadership Training Institute
on the Gifted and Talented
316 West Second Street, Suite PH-C
Los Angeles, California 90012

World Council for Gifted and Talented Children
c/o Milton J. Gold, Executive Secretary
Box 218
Teachers College, Columbia University
New York, New York 10027

Publications

Exceptional Children	Council for Exceptional Children 1920 Association Drive Reston, Virginia 22091
Gifted Child Quarterly	National Association for Gifted Children 217 Gregory Drive Hot Springs, Arkansas
G/C/T	G/C/T Box 55564 Mobile, Alabama 36606
The Creative Child and Adult Quarterly	8080 Springvalley Drive Cincinnati, Ohio 45236
Journal of Creative Behavior	S.U.N.Y. at Buffalo 1300 Elmwood Avenue Buffalo, New York 14222
Journal for the Education of the Gifted	James Alvino Educational Improvement Center Box 209 Sewell, New Jersey 08080
Mensa Bulletin	1701 West Third Street, Suite 1R Brooklyn, New York 11223
Resources for the Gifted	3421 North 44th Street Phoenix, Arizona 85018
Roeper Review	Roeper City and County School 2190 North Woodward Avenue Bloomfield Hills, Michigan 48013

Special Interest Groups

The Gifted Children's Pen Pals International Special Interest Group (SIG)
Mensa Journal International
c/o Dr. Deborah Darby
401 East 65th Street
New York, New York 10021

West Virginia Gifted Education Resources

Carol Alley, President
West Virginia Gifted Education Association
608 S. Terrace
Huntington, WV 25705

Barbara Jones, Coordinator
Gifted Education
West Virginia Department of Education
Capitol Complex, Building 6
Charleston, WV 25305

Edwina Pendarvis, Coordinator
Gifted Education Program
Special Education Department
Marshall University
Huntington, WV 25701

Michael Pyryt, Coordinator
Gifted Education Program
Special Education Department
West Virginia College of Graduate Studies
Institute, WV 25112

Debbie White, Coordinator
Gifted Education Program
Special Education Department
West Virginia University
Morgantown, WV 26506

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